PROJECT UPDATE – MAY 2012

Introduction

The OECD is carrying out the first international study of what students in higher education know and can do upon graduation: the Assessment of Higher Education Learning Outcomes (AHELO).

Higher education is an increasingly strategic investment for countries and for individuals. It is a critical factor in innovation and human capital development, and has been expanding fast globally. Some 135 million students now study around the world in more than 17 000 universities and other higher education institutions.

However, there are no tools available to compare the quality of teaching and learning in institutions on an international scale. The few existing studies are nationally focused, while international university rankings are based on reputation, inputs and/or research performance, and do not reflect the quality of teaching and learning, nor the diversity of institutions' missions and contexts.

The AHELO project is a unique and innovative attempt to fill this gap. It aims to develop criteria that will make it possible to evaluate the quality and relevance of what students learn in institutions around the world. For frontline higher education practitioners – from academics to institutional leaders – AHELO will provide valuable information on effective teaching strategies to enhance learning outcomes in higher education. Students, governments and employers also stand to benefit. AHELO will shed light on whether the considerable resources invested in higher education are being used effectively, and on the capacities of graduates to enter and succeed in the labour market.

Overview of the AHELO feasibility study

The AHELO feasibility study was launched with the support of both governments and higher education institutions to determine, by the end of 2012, whether an international assessment of higher education learning outcomes is scientifically and practically possible. The aim of the study is thus to explore the feasibility of assessing higher education quality across different institutions, countries, languages and cultures.

Three assessment strands focused on generic skills and the economics and engineering discipline-specific skills

To investigate the feasibility of carrying out an international assessment of higher education learning outcomes, the feasibility study is designed around three strands of work:

- **The Generic Skills strand**
  This first strand of work focuses on an assessment of generic skills, adapting existing performance tasks and multiple–choice questions to provide a valid instrument in a cross national context. The performance tasks are drawn from life experiences and are presented to elicit complex critical thinking, analytic reasoning, problem solving and written communication skills. The multiple-choice questions are designed to gauge learners' skills in thinking about non-specialist and generally accessible ideas and issues. Like the

performance tasks, the multiple-choice questions aim to test higher-order thinking about significant, real-world ideas and issues.

Countries participating in this strand of work include Colombia, Egypt, Finland, Korea, Kuwait, Mexico, Norway, the Slovak Republic and the United States (Connecticut, Missouri and Pennsylvania).

- **The Economics strand**

  This strand seeks to assess discipline-specific skills in economics. A global group of recognised experts in economics education developed a provisional assessment framework and instrument for this strand. The framework and the instrument aim to assess learning outcomes which students should be able to achieve by the end of a bachelor-type degree, such as demonstrating subject knowledge and understanding; demonstrating subject knowledge and its application to real world problems.

  The framework and assessment instrument do not focus on the recall of factual knowledge, but rather look at 'above content' skills including application of concepts, use of appropriate statistical and non-statistical tools, drawing conclusions, recommending policy, and being conversant with the 'language of Economics'.

  Countries participating in this strand of work include Belgium (Fl.), Egypt, Italy, Mexico, the Netherlands, the Russian Federation and the Slovak Republic.

- **The Engineering strand**

  Likewise, this strand seeks to assess discipline-specific skills in civil engineering. A global group of recognised experts in engineering education developed a provisional assessment framework and instrument for this strand. The framework and the instrument aim to assess learning outcomes which students should be able to achieve by the end of a bachelor-type engineering degree, such as applying knowledge and understanding to identify, formulate and solve engineering problems using established methods, and applying knowledge and understanding to develop designs to meet defined and specified requirements.

  The test questions are devised based on realistic contexts for engineering problems. A broad variety of contexts have been selected from a range of situations involving environmental, structural, geotechnical, urban/rural, coastal and construction engineering such as bridges, buildings and construction sites.

  Countries/economies participating in this strand of work include Abu Dhabi, Australia, Canada (Ontario), Colombia, Egypt, Japan, Mexico, the Russian Federation and the Slovak Republic.

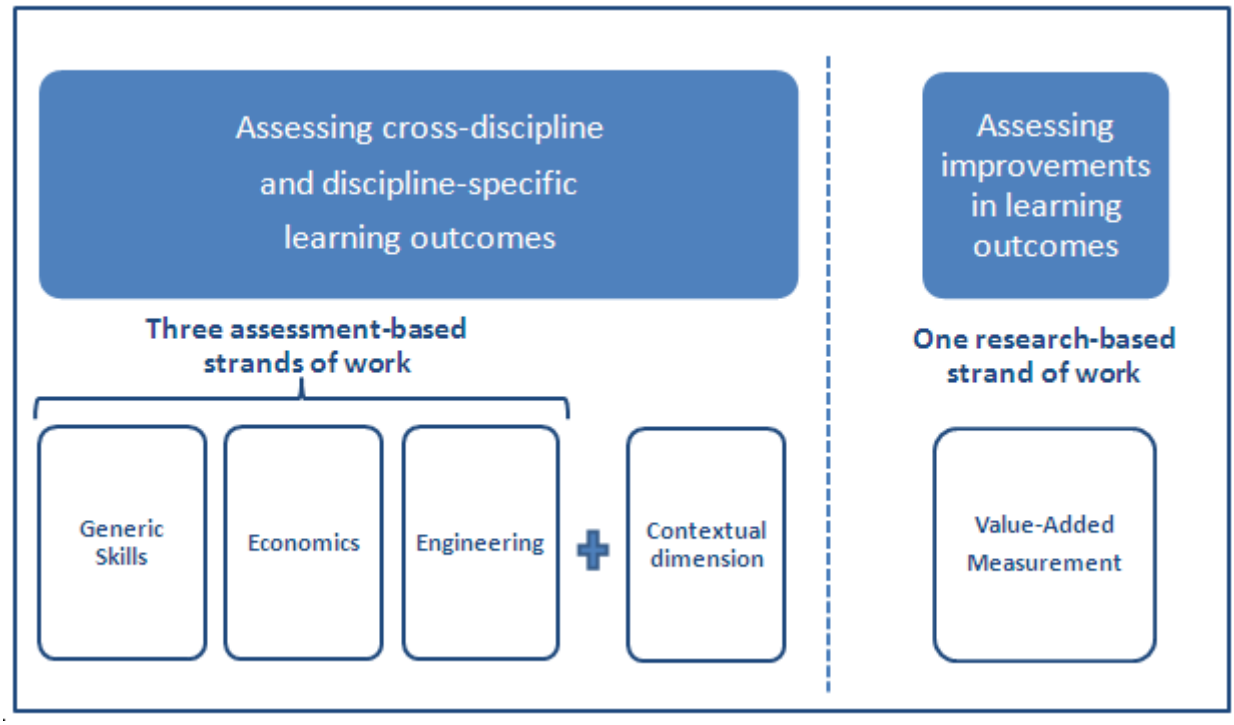
The need for a contextual dimension

While the main focus of the AHELO feasibility study is to gauge the feasibility of assessing learning outcomes, it is also necessary to assess the feasibility of gathering contextual variables that

will be needed to interpret performance measures and help institutions understand the performance of their students with a view to improve their teaching. The contextual variables will allow for disaggregation of assessment results by different kinds of institutional/programme characteristics and student populations, and provide information to help construct appropriate comparisons across institutions.

This aspect of the feasibility study also requires ensuring that the contextual surveys developed are internationally valid and reflect the cultural context of the countries in which the AHELO feasibility study is implemented. The contextual information will be collected from existing documentation at the country level and through three contextual surveys: a student survey, a faculty survey and an institution survey.

Figure 1. Assessing higher education learning outcomes



A fourth research strand to examine the measurement of improvements in learning outcomes

In addition to the three assessments strands, a fourth strand of work will explore the issue of value-added measurement in higher education institutions.

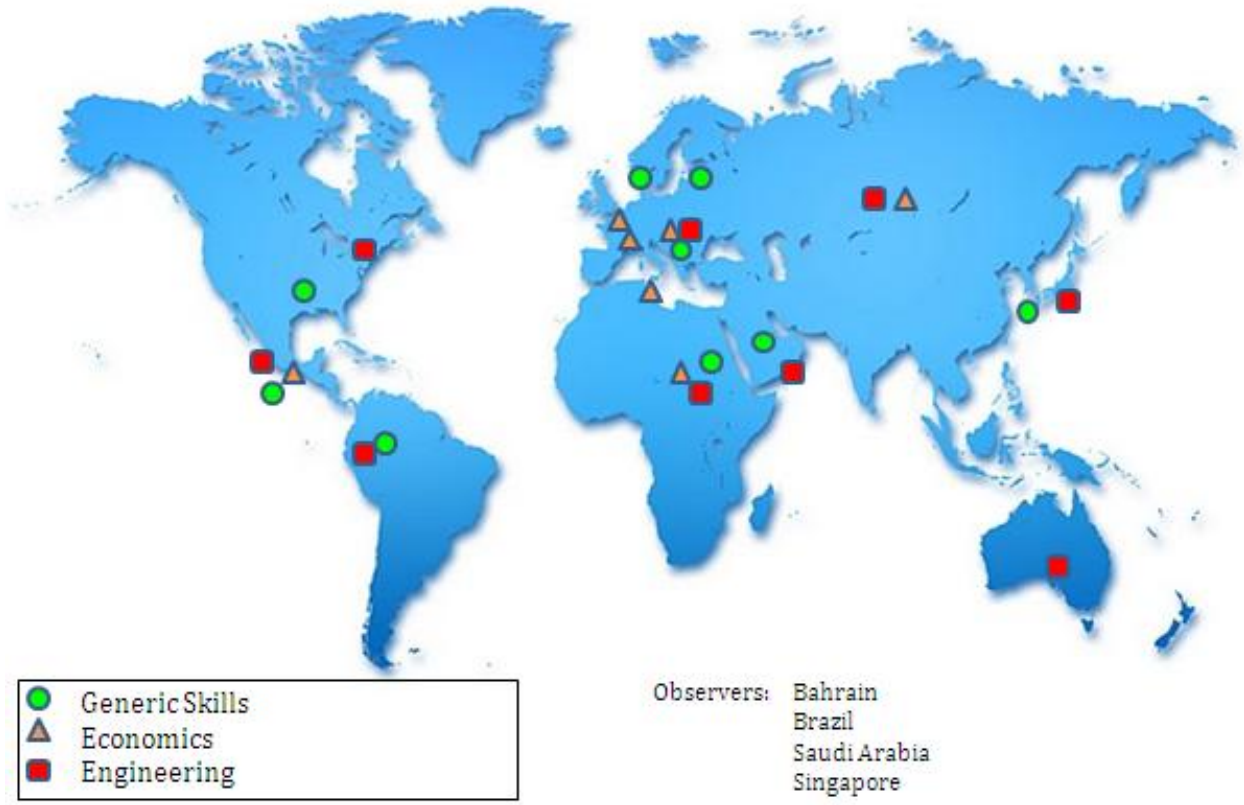
Indeed, some stakeholders consider that the concept of quality in higher education institutions is intertwined with the measurement of growth in student learning to the extent that information about school effectiveness and improvement is required to better understand the contribution of higher education institutions to student learning. In this perspective, not only student learning outcomes should be measured at the end of the students' studies, but growth in learning should also be measured so as to portray the net contribution of the institutions to student learning – or value-added.

However, the measurement of value-added is not straightforward. In the context of an international assessment of higher education student learning outcomes, how could the value-added or the contribution of higher education institutions to students' outcomes, be captured and isolated from the students' incoming abilities? How could an AHELO provide institutions with the information that will help them determine how well their students are learning and how their learning is comparable to other peer students at other institutions?

For the purpose of the AHELO feasibility study, research activities will be conducted to review methodological approaches, potential data sources and psychometric evidence with a view to providing guidance towards the development of a value-added measurement approach in case AHELO would develop into a fully-fledged study in the future. A literature review focusing on methodologies developed for the higher education context will be conducted to guide the recommendations of a panel of experts on the feasibility of measuring value-added in a context like AHELO.

Participating countries

The feasibility study involves seventeen participating countries/economies representing a range of geographic, linguistic and cultural backgrounds. The map illustrates the range of geographic, linguistic and cultural backgrounds represented in each strand of work.



The unfolding of the feasibility study

The work of the feasibility study is unrolling in several phases:

- Phase 1 - January 2010 to June 2011

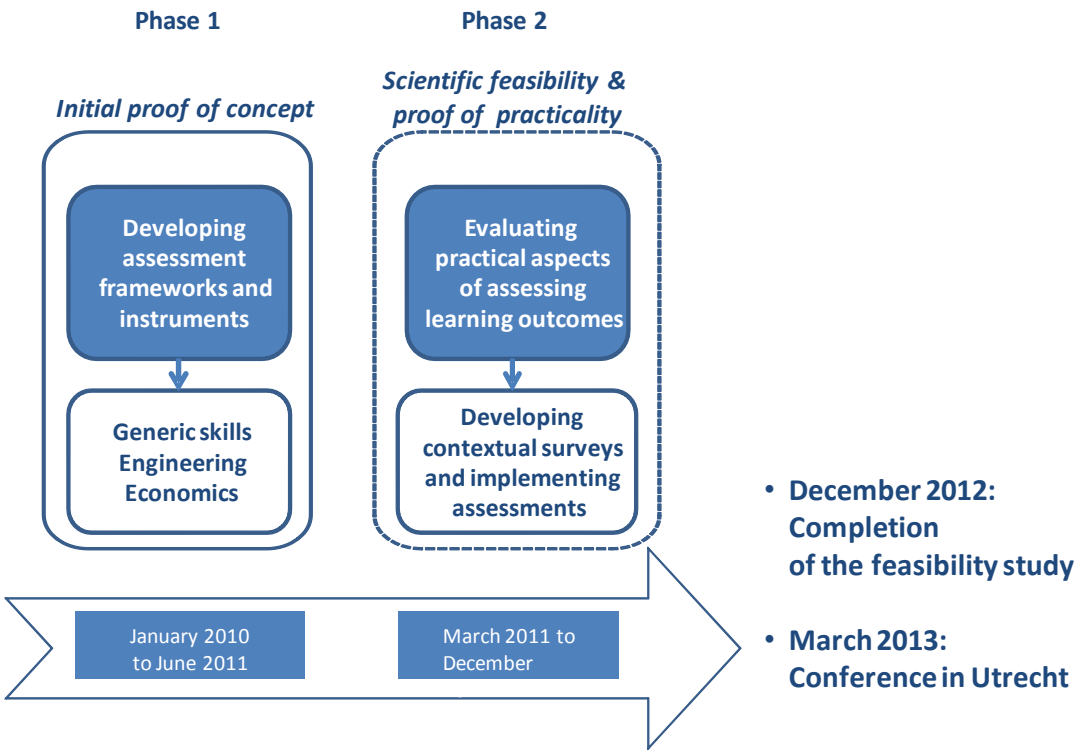
  The first phase of the work consisted of developing the provisional assessment frameworks and testing instruments suitable for an international context for each strand of work (generic skills, economics and engineering), and their small-scale validation (cognitive labs and small-scale testing with students) to get a sense of validity across languages and cultures.

- Phase 2 - March 2011 to December 2012

  In a second phase, the practical aspects of assessing students learning outcomes are now examined. The three assessment instruments (generic skills, economics and engineering) are implemented in a small group of diverse higher education institutions to explore the best ways to implicate, involve and motivate leaders, faculty and students to take part in the testing.

  In addition, the data collected as part of this second phase will enable a range of psychometric analyses such as bias analyses and in-depth examination of the validity and reliability of the construct performance measures. The dataset shall also allow preliminary analysis on the relationships between context and learning outcomes, and the factors leading to enhanced outcomes.

Figure 2 – AHELO Phases 1 and 2



Progress on goals and activities

To date, significant ground has been made in establishing feasibility through the first phase of the feasibility study. Major outcomes have been achieved, such as international agreement regarding discipline frameworks and instruments, and many challenges have been overcome. The section below provides an overview of the development of the work since the outset of the study.

Phase 1 – Initial proof of concept

The Generic Skills strand

The development work for the constructed-response section of the generic skills strand was contracted to the Council for Aid to Education (CAE), to draw on the existing US Collegiate Learning Assessment (CLA) – a 90-minute performance-based assessment. The work consisted of selecting two CLA performance tasks to assess generic skills, and adapting them so that they would be suitable to an international context. In addition, multiple-choice questions were added, drawing upon an existing cross-curricular generic skills tests developed by ACER. These multiple-choice questions require an additional 30 minute test administration.

The two performance tasks and their supporting materials were chosen by participating countries to ensure their cross-cultural appropriateness. They have then been translated in different languages and culturally-adapted for participating countries. The tasks have also been put to test with students from all participating countries who have taken the translated version of the CLA test in their own language and provided qualitative validation that this test of generic skills is relevant to them. This qualitative testing has also identified cultural differences that would need to be addressed in an AHELO main study, such as for instance differences in the perceived reliability of government agencies' information depending on the prevalence of corruption at national level, or differences in students' familiarity with performance tasks testing.

The multiple-choice questions were drawn from existing pre-validated questions designed to measure generic skills. Participating countries were consulted on and approved these questions which have been then adapted culturally, translated, and independently verified.

Emerging insight from the translation and adaptation activities for the performance tasks and multiple-choice questions indicates that cultural adaptations should be given careful consideration. Subsequent analyses of student performance coming from different cultural and educational settings will shed more light on these issues.

Early development of discipline-specific strand frameworks

The development work for the economics and engineering frameworks started in May 2009 with two groups of international experts from each discipline. Experts were selected to cover a range of continents and countries, as well as different schools of thought in each discipline. The assignment given to the experts was to define a conceptual framework of learning outcomes in economics and engineering following the Tuning approach (the two frameworks are available as OECD Education Working Papers on www.oecd.org/edu/ahelo).

The developed frameworks were intended to demonstrate that agreements on domain definition can be reached in two disciplinary fields as distinct as economics and engineering, and as such, provide a preliminary output of the AHELO feasibility study. They have also provided useful input for test developers to develop assessment frameworks and to design instruments to assess the performance of students who are close to obtaining their bachelor's degree.

The Economics strand

The development of the framework and assessment materials for the Economics strand was undertaken by the Educational Testing Service (ETS) as a member of the AHELO Consortium. The development work was overseen by an international Economics Expert Group.

The Economics instrument assesses the skills and knowledge of final-year bachelor's degree students. The instrument comprises 45 multiple-choice questions and one constructed-response question to provide additional coverage. The questions have been translated and adapted by participating countries, and their qualitative validation has been completed with focus groups and small numbers of students in a range of institutions within each country.

There was much uncertainty as to whether it was feasible to get academics from different countries to agree on what to measure in the disciplines as well as on an assessment instrument, especially in a social science like economics. This uncertainty was the main rationale for including an economics strand in the feasibility study. Remarkably, it was rather easy to get economics experts to agree on what an AHELO should cover and measure. This is because AHELO goes above content-knowledge and rather focuses on the application and use of the concepts and 'language' of economics.

The Engineering strand

The development of the framework and assessment materials for the Engineering Assessment was undertaken by the AHELO Consortium — specifically ACER, Japan's National Institute for Educational Policy Research (NIER), and the University of Florence. Several international consultants contributed to the development. Framework and test instrument development were overseen by an international Engineering Expert Group.

The Engineering instrument assesses the skills and knowledge of final-year bachelor's degree students and comprises test units developed around a key engineering problem. The tests units include a range of multiple-choice and constructed-response questions. The questions were translated and adapted by participating countries and qualitative validation was completed with focus groups and small numbers of students in a range of institutions within each country.

Initial feedback from the focus groups suggests that the authentic scenario tasks that have been developed stimulate students' interest in the tasks and are engaging.

Phase 2 – Scientific feasibility and proof of practicality

The contextual dimension

The contextual framework and instruments were designed by experts from the Centre for Higher Education Policy Studies (CHEPS) in the Netherlands and the Center for Postsecondary Research (CPR) in the United States, building on foundation work carried out by the OECD, the AHELO Group of National Experts and consultants. The development of the framework was undertaken through research and consultation, and by seeking the expert opinion of a range of groups and individuals from all over the world. Feedback from consultations has been used to finalise the framework and provided a basis for instrument development, validation, small-scale testing and delivery.

Three context survey instruments have been developed to identify factors that may help to explain observed learning outcomes of the target population: (1) a student context instrument; (2) a faculty context instrument; and (3) an institution context instrument. In addition, a range of indicators have been specified for collection at the national level to provide additional context data.

The information collected through the widespread consultation suggests that the contextual dimension instruments have the potential to provide valid, reliable and efficient measurement of the target constructs.

The implementation phase

Following the completion of the translation and adaptation of testing instruments in all strands of work for each participating country, the focus of activities shifted towards field implementation. National Project Managers received training in November 2011 and March 2012 to prepare for activities such as sampling, use of the AHELO test system, national management and procedures to implement the test instruments and contextual surveys. Training was also conducted for lead scorers from each country to provide them with detailed instructions on how to score constructed-response questions, train scorers and monitor scoring in their countries.

The actual implementation of the test instruments and contextual surveys started at the beginning of 2012. For each strand of work, each country invited about ten higher education institutions to participate in the feasibility study. Each higher education institution randomly selected 200 students for the online testing.

Testing activities are currently completed for most of the countries which are now preparing for scoring. Although it is too early to draw conclusions about the practical aspects of the feasibility of an AHELO, initial observations from countries' experience indicate a variety of scenarii from which lessons will be drawn. For example, while some countries and their institutions experienced difficulty in motivating students to sit the test, others achieved student participation rates of over 80%.

Overall, good progress has been made since the beginning of the feasibility study. The work accomplished to develop instruments and prepare for fieldwork did not suggest that an international assessment of higher education learning outcomes was not possible. More boldly and positively, there are genuine and sound indications that much of AHELO is feasible.

With the feasibility study now progressing towards its completion, the evaluation of the outcomes will be pursued through extensive psychometric analysis of the data. Furthermore, an international conference to be held on 14-15 March 2013 in Utrecht (the Netherlands) will provide a great opportunity to gather technical experts, country representatives and different stakeholder groups to discuss these findings and how to take the results from the feasibility study forward.

Sustainability

The AHELO feasibility study was launched in 2008 and is scheduled to run until late 2012. Commitment, expertise and communications have brought the study to its current status. AHELO brings together the OECD, a Group of National Experts panel of higher education and assessment specialists representing the participating countries, as well as more specialized experts and stakeholders from education associations around the world. All of them share an interest and commitment to improve higher education learning outcomes.

With the completion of the feasibility study in December 2012, final reports on the outcomes, findings and lessons learned will assist countries in deciding on the next step to improving higher education quality. If the study is successful at demonstrating the scientific and practical feasibility of such an international assessment, further development work will be considered by OECD member countries to prepare for a possible full-fledged AHELO including more countries, institutions and disciplines.

Organisation and partner involvement

The OECD is well placed to lead and implement the AHELO feasibility study given its institutional framework for co-operative and international comparative work, as well as its credibility and demonstrated expertise in developing large-scale international assessments such as the Programme for International Student Assessment (PISA) focusing on 15-year-olds at compulsory school level and the Programme for International Assessment of Adult Competencies (PIAAC) which examines the skills of the adult workforce.

Within the OECD, the Programme on Institutional Management in Higher Education (IMHE) provides a platform for the engagement of higher education institutions in AHELO alongside governments, in a way which will ensure that the approaches adopted take account of institutional needs and concerns. IMHE is open to all recognised higher education institutions in OECD countries, as well as associations of higher education institutions and government representatives. It can therefore provide a locus for consultation and steering of the feasibility study allowing countries which are not directly involved to provide commentary and monitor progress.

The feasibility study is managed by a small team at the OECD. The bulk of the technical work on the different strands is carried out through contractual arrangements with a Consortium including partners and expert working groups bringing high-level expertise in large-scale cross-national assessment and considerable experience with higher education research and development. In addition, a Technical Advisory Group comprised of international experts has been established to provide guidance on major technical issues such as instrument development procedures, sample and test design, translation procedures, scoring and verification procedures.

The OECD also invited a group of organisations with a stake or interest in higher education to join the AHELO Stakeholders Consultative Group (SCG). The SCG is a channel through which information about AHELO can be presented and discussed with these organisations. It is also a forum in which stakeholders can formulate and put forward ideas on how the study can be implemented. Members of this group include, among others, international associations of quality assurance agencies, students, faculties and/or higher education institutions, AHELO sponsors as well as representatives of employers and industries. For a complete list of the organisations involved please see www.oecd.org/edu/ahelo.

Acknowledgments

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Current sponsors

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